

A CRITICAL LIST OF THE SPHOEROSPIRA SECTION OF THERSITES.

By HUGH FULTON.

(Plate i.)

The collections of Dr. James C. Cox of Sydney, and of the late Capt. C. E. Beddome, both rich in specimens of this group, having passed through my hands, I have had the opportunity of examining many typical specimens, and thought a critical list might be of some service.

One great difficulty in working out this group has hitherto been the lack of authentic material, so many of the species having been founded upon such slight characters, that without one had for comparison actual types or co-types, it was quite impossible to identify specimens with any certainty from descriptions. Fortunately, the collections mentioned above contained many co-types, especially of the forms described by John Brazier of Sydney, whose descriptions, often without figures, and very rarely with comparative notes, generally indicate but characters common to the whole group.

It is probably owing to lack of authentic material at his disposal, that Dr. H. A. Pilsbry's comparatively recent monograph in Tryon's Manual is not up to his usual excellent form; his division of the section into perforate and imperforate species is not a natural one, for example, *andersoni*, Cox, occurs both perforate and imperforate, and the same thing occurs in other species of the group.

In this list I have endeavoured to arrange the various forms according to their relationship and have added notes upon their distinguishing characters.

I am greatly indebted for valuable assistance to Col. Beddome, Dr. James C. Cox, Chas. Hedley, Esq., John Ponsonby, Esq., and Edgar A. Smith, Esq.

GROUP OF *incei*, Pfr.

1.—*T. incei*, Pfr.

- P.Z.S., 1845, p. 126; Cox's Monog. Aust. L. Sh., pl. 5, fig. 5.
= *challisi*, Cox: P.Z.S., 1873, p. 565, pl. 48, fig. 3.
= *appendiculata*, Pfr.: P.Z.S., 1854, p. 149; Cox: Monog. Aust. L. Sh., pl. 5, fig. 11.
= *thatcheri*, Cox: P.Z.S., 1870, p. 170, pl. 16, fig. 2.
= *hanni*, Braz.: Proc. Linn. Soc. N.S.W. (i), 1876, p. 97.
= *hilli*, Braz.: P.Z.S., 1875, p. 32, pl. 4, fig. 3.
= *johnstonei*, Braz.: P.Z.S., 1875, p. 32, pl. 4, fig. 2.
= *bayensis*, Braz.: P.L.S., N.S.W. (i), 1872, p. 2.
= *praetermissi*, Cox: Monog. Aust. L. Sh., p. 111, pl. 20, fig. 13.
Loc.—Queensland.

Types of *incei* and *appendiculata* in British Museum.

Compared with the type of *incei*, typical *appendiculata* is a little flatter in form, *thatcheri* a little broader, *hilli* smaller and more conical : *johnstonei* same form as *hilli*, but larger ; *bayensis* is simply a thicker form of *appendiculata*, *praetermissi* is the lighter coloured variety with no circum-umbilical brown patch, but that character is not constant.

I have not seen a specimen of *challisi*, but judging from the description and figure, it is evidently almost identical with typical *incei*.

The foregoing comparisons are made from typical specimens, but they are closely linked together by intermediate forms, proving that they belong to one species.

Pilsbry, in Tryon's Manual of the Mollusca, vol. vi, p. 167, had evidently not a typical specimen of *incei* before him, but rather one of the varieties, as he distinguishes it by the absence of the brown circum-umbilical patch, a character that is present in the type specimen of *incei*.

T. *incei* v. *yepponensis*, C. E. Beddome.

Proc. Linn. Soc. N.S.W., 1897, vol. xxii, p. 123 figd.

Loc.—Yeppon, near Rockhampton, Queensland.

A lighter-coloured shell, and with the umbilicus more excavately open than in typical *incei*.

2—T. *lessoni*, Pfr.

Pfr. Sym., 1846, iii, p. 71 ; Reeve : Con. Icon., fig. 754.

= *seminigra*, Morelet : Journ. de Conchyl., 1864, p. 289.

= *parsoni*, Cox : P.Z.S., 1872, p. 18, pl. 4, fig. 2.

Loc.—Queensland.

Types in British Museum.

The types of *lessoni* and *parsoni* represent the extremes of this species, the former being very small and somewhat depressed, whereas the latter is larger and rather higher in the spire than usual. Although *lessoni*, by reason of its dark brown colour, white peristome, and absence of spiral bands on the lower whorls, is readily separable from *incei* ; yet it agrees so closely in other respects, that I am doubtful as to whether it can be anything more than a colour variety of that species. The earlier whorls are lighter in colour and the middle ones have generally two or three narrow spiral bands

T. *lessoni* v. *aureedensis*, Brazier.

P.Z.S., 1871, p. 640 ; Tryon's Man. of Conch., vol. viii, p. 282, pl. 54, figs 7-9.

Loc.—Yeppon, near Rockhampton, Queensland.

Type in Australian Museum.

Very similar above to *lessoni* in form and coloration, but slightly flatter below and with a broad light-yellowish circum-umbilical patch ; the triangular dilated portion of the peristome at the point of insertion is white, whereas in *lessoni* it is of a brownish colour.

T. lessoni v. **lutea**, n. var.

Pl. 1, fig. 4.

Loc.—N. Queensland.

Same form as *lessoni* v. *aureolensis*, but of a light-yellowish colour. Of three specimens before me one is entirely bandless, but the other two have the narrow light-brown spiral bands on earlier whorls, the same as one finds on most specimens of *aureolensis*.

3.—T. curtisiana, Pir.

P.Z.S., 1863, p. 528.

= *bala*, Braz. : Proc. Linn. Soc. N.S.W. (iii), 1878, p. 78, pl. 8, fig. 4.*Loc.*—Townsville and Magnetic Is., Queensland.

Somewhat like *lessoni* in form and coloration, but the whorls increase rather more rapidly in size, it has half a whorl less, the aperture is not quite so broad, the peristome is less dilated at the point of insertion and of a light reddish-brown colour, not white as in *lessoni*.

4.—T. andersoni, Cox.

P.Z.S., 1871, p. 644, pl. 52, fig. 4.

Loc.—Rockhampton, Queensland.

Type in British Museum.

This species is most variable in size: of the twenty before me the following are the dimensions of four specimens:—

Alt. 15, maj. diam. 27 millim.

Alt. 18, „ „ 26 „

Alt. 21, „ „ 33 „

Alt. 26, „ „ 30 „

Some specimens are quite imperforate, but more commonly it is more or less perforate.

Pilsbry in Tryon's Manual, vol vi, p. 172, pl. 39, figs. 82 and 83, describes and figures perforate specimens of this species as *yulei*, but gives a figure of the true *yulei* on plate 23, figures 65 and 66.

Andersoni can be separated from *incei* by its thinner substance, its less oblique, less expanded, and, brown peristome, it is also less openly umbilicated and has half a whorl less,

From *yulei* it can be distinguished by its lighter coloration and narrower bands above, its narrower umbilicus and much less expanded peristome.

5.—T. yulei, Forbes.

Appendix Voy. "Rattlesnake," 1852, p. 377, pl. 2, fig. 6.

= *rainbirdi*, Cox : P.Z.S., 1870, p. 170, pl. 16, fig. 1.*Loc.*—Queensland.

Types in British Museum.

The types of *yulei* and *rainbirdi* are extreme forms, the type of *yulei* being a small light-coloured, and depressed form, whilst the type of *rainbirdi* is large, globose, and darker-coloured ; the very large series before me closely connects these two forms.

The broadly-expanded, dark-brown peristome and excavated umbilicus, differentiates this form from its allies.

GROUP OF *frazieri*.

6.—*T. frazeri*, Gray.

Zool. Beechey's Voy. Moll., 1839, p. 143, pl. 38, fig. 6.

= *mossmanni*, Braz. : P.Z.S., 1875, p. 33, pl. 4, fig. 6.

Loc.—New South Wales and Queensland.

This species varies greatly in size and coloration ; a specimen before me is of a light yellowish-brown with only one colour band, situated at the suture of the lower whorls ; another has an additional one at the periphery of the last whorl, whilst others are nearly covered with dark brown spiral bands. The colour of the peristome varies from black to a light bluish-grey.

Some of the larger forms approach *informis*, Mouss., but the latter can be readily separated by its higher spire and more rapidly increasing whorls.

The shell described as *mossmanni* is a rather globose form of *frazieri* with a black peristome ; the original figure is misleading, being much higher in proportion to width, according to the dimensions given in the description.

T. frazeri v. *flavescens*, Hedley.

I have not seen this remarkable variety said to be "of a uniform light yellow, lip pure white."

Loc.—Corumbui Creek, Queensland.

7.—*T. rawnesleyi*, Cox.

P.Z.S., 1873, p. 564 pl. 48, fig. 2.

Loc.—Mt. Elliott, Queensland

A heavy form of a uniform dark brown, with a thick and broadly expanded peristome.

T. rawnesleyi v. *mazee*, Braz.

Proc. Linn. Soc. N.S.W., 1878 (iii), p. 79, pl. 8, fig. 5.

Loc.—Rockingham Bay, Queensland.

From typical *rawnesleyi* this differs chiefly in coloration, having numerous dark-brown spiral bands upon a light yellowish-brown ground ; it varies greatly in size and resembles *frazieri*, but can be separated by the thicker peristome and smaller aperture.

All the *frazieri* group have the microscopic waved striation, although it is almost obsolete in some specimens.

In *frazieri* there are generally on the middle whorls more or less conspicuous (under a strong lens) microscopic spiral impressed lines, which I have not seen on specimens of *mazee*.

8.—*T. rockhamptonensis*, Cox.

P.Z.S., 1873, p. 150.

= *moresbyi*, Angas : P.Z.S., 1876, p. 267, pl. 20, figs. 8, 9.*Loc.*—Rockhampton, Port Denison, Queensland.

A solid form somewhat similar to *raunsesleyi* var. *mazee* in coloration but readily distinguished by its *flat base* and its thinner and darker coloured peristome.

Moresbyi was described from an elevated specimen of *rockhamptonensis*.

T. rockhamptonensis v. *pallida*, Hedley & Musson.

Proc. Linn. Soc. N.S.W., 1891, p. 556.

Loc.—Rockhampton, Queensland.

I have not seen this shell, which is described as "bandless, of a tawny yellow colour." I thought my *lessoni* v. *lutea* was this variety and sent a specimen of that to Mr. Hedley, but he writes "your shell is quite different, the type specimen of *pallida* is an odd shell, I have seen none like it and now doubt if it is not an abnormal individual."

GROUP OF *whartoni*.9.—*T. bebias*, Brazier.

Proc. Linn. Soc. N.S.W. (iii), 1878, p. 78.

Loc.—Garden Is., Rockingham Bay, Queensland.

Almost identical with *whartoni* in general appearance, but the umbilicus is less open, some specimens being quite imperforate; may or may not have a circum-umbilical brown patch. The chief distinction between this and *whartoni* is the difference in the microscopic sculpture, the latter consists of closely-set, silk-like, slightly waved striae, whereas in *bebias* it is coarser and more granular.

10.—*T. zebina*, Brazier.

Proc. Linn. Soc. N.S.W., 1878, p. 78, pl. 8, fig. 2.

Loc.—Douglas River, Queensland

Type in Australian Museum, Sydney.

Very close to *bebias* but thicker, more globose, and its microscopic granulated sculpture is more conspicuous. It is said by Brazier to be imperforate, but I have a slightly perforate specimen before me.

11.—*T. whartoni*, Cox.

P.Z.S., 1871, p. 55, pl. 3, figs. 5, 5a.

= *mourilyana*, Braz. : P.Z.S., 1895, p. 31, pl. 4, fig. 1.*Loc.*—Port Denison, Queensland.

Type in British Museum.

A thin multi-banded shell approaching some of the varieties of *mulgrarensis*, but distinguished by its microscopical sculpture, which consists of oblique, closely-set, slightly waved, almost straight striae; this sculpture is seen (under the lens) to be quite distinct from that of *bebias* and its allies.

12.—T. cookensis, Brazier.

Proc. Linn. Soc. N.S.W. (i), 1875, p. 17.

= *tomsoni*, Braz. : P.L.S.N.S.W. (i) 1876, p. 97.

= *cookensis*, Braz. : Tryon's Man. of Conch., vol. vi., p. 97.

Loc.—Gould Is., Rockingham Bay, and Frazer's Is., Queensland (not Cooktown, *jide* Brazier).

This has the same microscopic sculpture as *bebias*, but is smaller, darker-coloured, the aperture not quite as broad and slightly less oblique. The shell is of a somewhat thicker substance, and the colour bands do not show clearly through the aperture as in *bebias*, the interior being almost opaque whitish ; the peristome of *cookensis* is also thicker and darker in colour.

13.—T. mulgravensis, Brazier.

Pl. 1, fig. 1.

P.Z.S., 1872, p. 21.

= *mulgravei*, Braz. : Proc. Roy. Soc. Queensland, 1889, p. 101.

Loc.—Palm Is., N.E. Australia.

With regard to this species, figured here for the first time, there must, I think, have been some error in the dimensions given, viz., alt. 1 in. 1 line : greater diam. 2 in. 4 lines. (Alt. 27 ; diam. 58 millim). A shell of these dimensions would be a most remarkable form for this group. A specimen from the collection of the late Capt. C. E. Beddome of Tasmania, who had many shells named by Brazier, measuring alt 32 ; maj. diam. (including peristome) 34 millim., answers better to Brazier's description, "turbinate globose."

Since writing the above Mr. Charles Hedley has been kind enough to measure the type specimen in the Australian Museum and gives the following dimensions : alt. 30 ; maj. diam. 38 millim.

I have only seen one specimen.

T. mulgravensis v. **palmensis**, Brazier.

Pl. 1, fig. 5, 6.

Proc. Linn. Soc. N.S.W. (i), 1876, p. 105.

1. loc.—Palm Is., Queensland.

An extremely variable form, the typical specimens being solid and globose-conic whilst others are depressed and of thin substance, resembling *whartoni*. The microscopic sculpture is the same as that of *bebias*, but *palmensis* is larger, has the umbilicus more open and is further distinguished by it uniformly coloured peristome (which may be dark or whitish) the colour-bands not extending to the edge as in *bebias*.

T. mulgravensis v. **meridionalis**, Brazier.

Pl. 1, fig. 7, 8.

Proc. Linn. Soc. N.S.W. (i), 1880, vol. 5, p. 458.

Loc.—Palm Is., Queensland.

Described from a young specimen, adult specimens being thicker, and the peristome lighter in colour.

This uniform yellowish variety with a narrow sutural dark-brown band, occurs also with a narrow band, at the periphery of last whorl.

GROUP OF *blomfieldi*, Cox.**14.—T. informis**, Mouss.

Journ. de Conchyl., 1869, p. 59, pl. 4, fig. 3.

Loc.—Port Mackay, Queensland.

The largest species of the group (see note under *frazieri*). A bandless variety occurs of a uniform dark brown with a narrow yellowish subsutural border.

15.—T. blomfieldi, Cox.

Catal. Aust. L. Sh., 1864, p. 19; Monog. Aust. L. Sh., 1868, pl. 1, fig. 1.

= v. *warroensis*, Hed. & Musson: Proc. Linn. Soc. N.S.W. 1891, p. 556, Viag. Magenta, pl. 2, fig. 5.

Loc.—Port Curtis, Queensland.

A distinct species, readily distinguished by its light-coloured earlier whorls, contrasting with the very dark-brown lower ones. Under a strong lens the lower whorls are seen to have more or less obsolete, numerous spiral impressed lines.

The variety *warroensis* is the lighter-brown variety, but specimens before me show various degrees between that and the darker typical colour.

16.—T. coneurs, n. sp.

Pl. 1, fig. 3.

= *parsoni*, Pils. (not Cox): Tryon's Man. of Conch., vol. vi., p. 162, pl. 35, figs. 11, 12 (not 13).

Shell sub-globose. solid, narrowly but deeply umbilicated, light-coloured above, with two narrow indistinct light-brown spiral bands on the middle whorls, last whorl of a very dark-brown, with a narrow conspicuous yellowish band at the suture; whorls $4\frac{1}{2}$, last descending in front. Aperture very oblique, rather dark within. Peristome moderately expanded, dark brown, triangularly dilated at point of insertion and partly covering the umbilicus.

Maj. diam. 35; alt. 28 millim.

Loc.—Gayndah, Queensland.

This species is very like *blomfieldi* in coloration, but more compressed in form, the umbilicus is more open, and the peristome not so broadly expanded.

It is quite distinct from *curtisiana*, Pfr., although bearing a superficial resemblance to that species.

17.—*T. croftoni*, Cox.

P.Z.S., 1872, p. 18, pl. 4, fig. 1.

Loc.—Hydrometer River, Queensland.

Type in British Museum.

18.—*T. coxi*, Crosse.

Journ. de Conchyl., 1866, p. 195 ; Conchyl. Cab., p. 534, pl. 163, figs. 5, 6.

Loc.—Port Molle and Port Denison, Queensland.Although always easily separated, almost the only difference between *croftoni* and *coxi* is that of coloration.GROUP OF *macleayi*.19.—*T. oconnellensis*, Cox.

P.Z.S., 1871, p. 55, pl. 3, figs. 4, 4a

Loc.—The O'Connell River, Port Denison, Queensland.

Type in British Museum.

A distinct form easily distinguished by its basal flatness (the spire varies greatly in height) and broadly excavated umbilical area.

20.—*T. arthuriana*, Cox.

P.Z.S., 1873, p. 564, pl. 41, figs. 1, 1a.

Loc.—L. Is., N. Queensland.

Nearest to the foregoing species, but lighter-coloured above, the last whorl is more rounded and the umbilicus not nearly so broadly excavated.

21.—*T. gratiosa*, Cox.

P.Z.S., 1871, p. 53, pl. 3, figs. 1, 1a.

Loc.—Whitsunday Is., Queensland.

Type in British Museum.

A distinct form, easily recognised.

22.—*T. etheridgei*, Brazier.

Pl. 1, fig. 2.

Proc. Linn. Soc. N.S.W. (ii), 1877, p. 25.

Loc.—Andromache River, N.E. Coast of Australia.

Type in Col. Beddome's collection.

Differs from *gratiosa* in having a white peristome and numerous yellowish spiral bands on lower part of the last whorl. It is probably only a variety of *gratiosa*. I have only seen two examples.23.—*T. macleayi*, Cox.

P.Z.S., 1864, p. 485, figs. 1—3.

Loc.—Whitsunday Is., and Port Denison, Queensland.Somewhat similar to *gratiosa* in form, but readily separated by its very different coloration.

GROUP OF *greenhilli*.24.—*T. greenhilli*, Cox.

Journ. de Conchyl., 1865, p. 46, ; Monog. Aust. L. Sh., p. 40, pl. 9,
fig. 1 and pl. 18, fig. 8.

Loc.—Upper Denison River, Queensland.

Closely allied to *sardalabiata*, from which it differs in being generally thinner, of a rounder form, darker in colour, and readily separated by its conspicuous (under the lens) microscopical granular sculpture.

Pilsbry, in Tryon's Manual of Conchology, places this under *Balistes*.

25.—*T. sarda'abiata*, Cox.

P.Z.S., 1871, p. 54, pl. 3, fig. 3.

Loc.—Mt. Dryander, Port Denison, Queensland.

Type in British Museum.

A light straw-coloured shell allied to *greenhilli*.

POSITION DOUBTFUL.

coarctata, Fér, Hist. Moll., pl. 106, figs. 6, 7.

Species placed under *Sphoerospira* by Pilsbry in Tryon's Manual of Conchology, but belonging to other sections.

barneyi, Cox. (*Hadra*?).

beddomeae, Brazier. (*Hadra*).

bellendenkerensis, Brazier. (*Hadra*).

broadbenti, Brazier. (*Sulcobasis*?).

creedi, Cox. (Section?).

hironi, Brazier. (*Papuina*).

mitchellae, Cox. (*Thersites*).

nicomede, Brazier. (*Hadra*).

wesselensis, Cox. (*Rhagada*).